

REMARKS

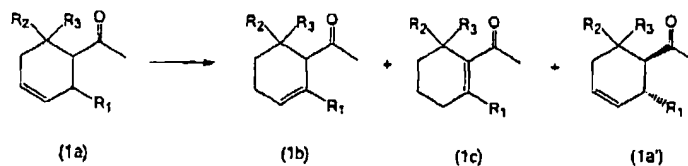
Review and reconsideration on the merits are requested. The Examiner was kind enough to grant a telephone interview concerning this application, the same being summarized below. The prior art discussed was Mookherjee, Kampf and Boshagen. The Examiner initially expressed the view that a strong *prima facie* case of obviousness had been established. However, with further discussion, the Examiner seemed to be tending towards the allowability of, for example, at least narrow claims where the catalyst and solvent were further defined. For example, claims such as claims 12, 13 and 14. The Declaration of record was discussed. The Examiner focused on this statement at page 3 just above the Table that "The following experimentation following the essential conditions of Mookherjee was then carried out." The Examiner specifically questioned as to why the parameters in the Table were considered the "essential conditions" of Mookherjee with reference to Example II and Example X of Mookherjee. Applicants respond below.

The pending claims were claims 1-15.

The rejection: claims 1-15 were rejected as being unpatentable over Mookherjee et al ('098) and Kampf (DE 3003894) and Boshagen et al ('242) in combination.

Applicants traverse as below; these references will be referred to as Mookherjee, Kampf and Boshagen.

The present invention relates to a production process shown in the following.



The process is for producing 2-cyclohexenyl methyl ketone represented by the general formula (1b), 1-cyclohexenyl methyl ketone represented by the general formula (1c), trans-3-cyclohexenyl methyl ketone represented by the general formula (1a'), or a mixture thereof by isomerizing 3-cyclohexenyl methyl ketone represented by the general formula (1a) in the presence of an isomerization catalyst.

In Mookherjee, the following production process is described.



The Mookherjee process is for producing trans-3-cyclohexenyl methyl ketone by isomerizing cis-3-cyclohexenyl methyl ketone in an alcohol solvent in the presence of an alkali metal hydroxide or an alkali metal alkoxide.

Kampf describes a process for isomerizing a double bond from a non-conjugated state to a conjugated state in a 1,3-butadiene. The Kampf isomerization is carried out at 50 to 250°C using an alkali alcoholate as an isomerization catalyst and dimethyl sulfoxide, dimethylformamide, N-methylpyrrolidone, or the like, as a solvent.

Boshagen discloses the following process.



Specifically (Example 1), the Boshagen process is for producing 2-ethyl-3-imino-1,2-benzisothiazoline hydrochloride by isomerizing 3-ethylamino-1,2-benzisothiazole hydrochloride in an aqueous solution at 50°C.

In the Kampf process, a non-conjugated double bond is isomerized to a conjugated state. However, in the present invention, a main product of the isomerization of compound (1a) having an isolated double bond is compound (1b) in a non-conjugated state, although compound (1c) in a conjugated state is also obtained.

Applicants have summarized the ratios of the resulting products in the Examples of the present application as follows.

- Example 1: (1a'):(1b):(1c) = 10.5:88.3:1.2
Example 2: (1a'):(1b):(1c) = 12:61:27
Example 3: (1a'):(1b):(1c) = 4:64:32
Example 4: (1a'):(1b):(1c) = 17:56.5:26.5
Example 5: (1a'):(1b):(1c) = 4.4:69.8:25.8
Example 6: (1a'):(1b):(1c) = 28.9:49.2:21.9
Example 7: (1a'):(1b):(1c) = 52.3:32.9:14.8
Example 8: (1a'):(1b):(1c) = 34.7:45.4:19.9
Example 9: (1a'):(1b):(1c) = 30.2:42.5:27.3
Example 10: (1a'):(1b):(1c) = 67.5:20.1:12.4
Example 11: (1a'):(1b):(1c) = 25.5:48.6:25.9

As is clear from the above summary, a main product among the products obtained in the isomerization of the double bond is compound (1b) in a non-conjugated state and is not the compound (1c) in a non-conjugated state. The process described in Kampf is a process for obtaining a compound in a conjugated state, which relates to carbon-carbon double bonds. In the process of the present invention, as opposed to the process described in Kampf, the carbon-carbon double bond is involved with the relationship between a carbonyl group and a carbon-carbon double bond, quite different from the situation in Kampf where a non-conjugated double bond is simply isomerized to a conjugated state. The process of the present invention, of course, is not directed to achieving a conjugated state in the desired objective compounds.

Applicants respectfully submit that one of ordinary skill in the art would not be led to modify Mookherjee in view of Kampf, and even if the combination is made, there would be no reasonable expectation of success by one of ordinary skill in the art.

The Boshagen process relates to isomerization of an imine and further involves rearrangement of the R¹ group. The reaction in Boshagen is a reaction specific to the Boshagen compounds and is only achieved in compounds where two nitrogen atoms are present at the 1,3-positions. Therefore, this Boshagen reaction is quite different from the isomerization of a carbon-carbon double bond.

Applicants respectfully submit that there would be no reason for one of ordinary skill in the art to modify Mookherjee in view of Boshagen, or Mookherjee/Kampf in view of Boshagen, and, further, even if the combination is made, there would be no reasonable expectation of success by one of ordinary skill in the art.

Accordingly, Applicants request withdrawal of the rejections.

The Examiner has, however, questioned the Table at page 3 of the DECLARATION UNDER 37 C.F.R. § 1.132 of record. Applicants have analyzed Mookherjee and the DECLARATION and Applicants provide the following remarks in response.

In the production process of Mookherjee, the reaction in Example II is carried out in ethanol as a solvent under a reaction temperature of ethanol reflux (about 80°C) for 25 hours using KOH as a base and the reaction in Example X is carried out in methanol as a solvent under a reaction temperature of methanol reflux (about 65°C) for 24 hours using NaOMe as a base.

On the other hand, in the process in the Table on page 3 of the 1.132 Declaration, the reaction in the first case is carried out in propylene glycol dimethyl ether as a solvent at a reaction temperature of 135°C for 4 hours using KOH as a base and the reaction in the second case is carried out in methanol as a solvent at a reaction temperature of 85°C for 4 hours using NaOMe as a base.

Thus, while the reaction conditions are not completely identical between the DECLARATION and Mookherjee, in Applicants view they are regarded as about the same in view of the bases involved, the reaction temperature, the reaction time and the solvents used. Accordingly, Applicants respectfully submit that the DECLARATION is of probative value in assessing the patentability of the claims of the present application.

Furthermore, in the first case, the reaction is carried out at a considerably higher reaction temperature, i.e., 135°C, as compared with the reaction temperature in the case of Mookherjee.

AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Appln. No. 09/875,158

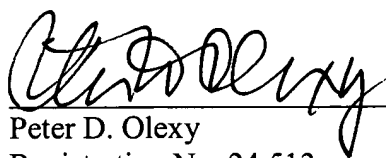
Even under the more severe conditions as compared with the conditions of Mookherjee, compounds (1b) and (1c) which are products of double bond isomerization are not obtained.

In the present invention, the synthesis of compounds (1b) and (1c) which are products of double bond isomerization was first achieved or reached by the Inventors herein by suitably selecting the base, reaction temperature, reaction time and reaction solvent used.

Applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine the references as the Examiner has and, even if combined, one of ordinary skill in the art would have no reasonable expectation of success with the "combined" process. Applicants thus submit withdrawal of the rejection is proper.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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